APPARATUS AND METHOD FOR VOLUMETRIC RECONSTRUCTION OF A CYCLICALLY MOVING OBJECT

ABSTRACT OF THE DISCLOSURE

A method for volumetric reconstruction of a cyclically moving object using a computed tomography (CT) system includes scanning a cyclically moving object with a CT imaging system including at least one of an area detector and a linear detector to encompass the desired field of view and a rotating gantry to measure projection data during a plurality of cycles of the cyclically moving object. The method also includes dividing a period of the cyclically moving object into a discrete number of phases, identifying an initial set of projection data at a desired phase of a first cycle at a first angle, identifying at least one subsequent set of projection data at the same desired phase of a subsequent cycle at an angle that is different from the first angle, and combining the initial set of projection data with each subsequent set of identified projection data and using a reconstruction algorithm to generate a three-dimensional image. The method further includes repeating the steps of identifying an initial set of projection data at a desired phase of a first cycle at a first angle, identifying at least one subsequent set of projection data at the same desired phase of a subsequent cycle at an angle that is different from the first angle, and combining the initial set of projection data with each subsequent set of identified projection data and using a reconstruction algorithm to generate a collection of three-dimensional images for the desired phases; and temporally filtering the collection of three-dimensional images on a pixel by pixel basis.